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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/658,042	09/07/2000	Weifang Luo	08935-220001 / M-4931	2542

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FISH & RICHARDSON PC
225 FRANKLIN ST
BOSTON, MA 02110

EXAMINER

KALAFUT, STEPHEN J

ART UNIT	PAPER NUMBER
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1745

DATE MAILED: 03/10/2003

20

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/658,042

Applicant(s)

LUO ET AL.

Examiner

Stephen J. Kalafut

Art Unit

1745

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2003 and 19 February 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 23,25 and 26 is/are allowed.
- 6) ☒ Claim(s) 1,3-22,24 and 27-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

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A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 1/16/03 has been entered.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Claims 1, 3-6, 8, 16-22 and 37-40 are rejected under 35 U.S.C. 102(b) as being anticipated by Tomantschger *et al.* (US 5,300,371).

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Tomantschger *et al.* disclose a cell with an anode (14), a separator (16), an alkaline electrolyte (column 14, lines 47-51) and a cathode (18). The cathode may contain an active material such as MnO₂, conductive additives such as carbon and graphite (column 17, lines 2-5) and a binder such as polyethylene or PTFE (column 15, lines 45-50). The cathode may also include conductive fibers made of carbon or graphite, in an amount ranging from 0.1 percent to about 3.0 percent, or even up to 5.0 percent, all percentages by weight (column 14, line 62 through column 15, line 11). Either or both of the amounts of 0.1 and 3.0 percent would fall within the ranges recited by claims 3-6 and 39. The binder may be present also in these amounts (column 15, lines 45-50), which would meet the range recited in claim 38. Regarding claims 16-18, recitations of how the carbon fibers were made are treated under product-by-process practice. See MPEP 2113 and the cases cited therein. The process steps are not given patentable weight unless they are shown to impart some necessary characteristic to the resulting product, which cannot result from other processes. Tomantschger *et al.* also teach that their carbon fibers may be as short as about 100 micron, which would be 100,000 nanometers. This would fall within the ranges recited in claims 19-21. Regarding claim 22, Tomantschger *et al.* disclose graphite fibers (column 8, line 40), which would have one layer of graphite, and thus “between about 1 and about 500 layers of graphite”. Because all of the components recited by the claims are disclosed by Tomantschger *et al.*, their cell would be just as “primary” as the present cell.

Claims 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Bernard *et al.* (US 5,989,746).

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Bernard *et al.* disclose a cell including an anode, a separator, an alkaline electrolyte, and a cathode of nickel hydroxide, which also contains 2 weight percent carbon fibers (and thus “less than about 5% of carbon by weight”) and a PTFE binder. See example 5. The carbon fibers are the only carbon component of this particular cathode. The cell would thus meet the present recitation “carbon consisting of carbon fibers”. Since all of the components recited by the claims are disclosed by Bernard *et al.*, their cell would be just as “primary” as the present cell.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-7, 9-12, 35, 36 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomantschger *et al.* (US 5,300,371).

These claims differ from Tomantschger *et al.* by reciting the amount of carbon fibers or active material within the cathode mixture. The relative amounts of components, however, is considered to be a matter of optimization within the skill of the ordinary artisan, who would have to balance out the considerations of electrical conductivity, mechanical stability and electrical capacity. These claims would thus be obvious over Tomantschger *et al.*

Claims 13-15, 24, 27 and 30-34 are rejected under 35 U.S.C. 103(a) and (e) as being unpatentable over Tomantschger *et al.* (US 5,300,371) in view of Friend *et al.* (5,110,693).

Tomantschger *et al.* does not disclose carbon fibers having the diameters recited in these claims. However, Friend *et al.* disclose carbon fibrils having diameters between 3.5 and 75 nanometers (column 2, lines 37-39), which exhibit high electrical conductivity, good corrosion resistance in alkaline environments, and high surface area (column 2, lines 28-30). Since Tomantschger *et al.* use carbon for its conductivity, and disclose an alkaline environment, it would be obvious to use the carbon fibrils of Friend *et al.* as the carbon fiber component of the cathode mixture of Tomantschger *et al.* The relative size of the cathode active material to the carbon fibers would be a matter of optimization to the ordinary artisan, since this would affect the relative surface area of the two components, and in turn the ability of the two to transfer electrons between them. Since the surface area of the carbon is related to its diameter, the surface area recitation of claim 24 would inherently accrue to at least some of the fibers.

Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomantschger *et al.* (US 5,300,371) in view of Di Franco (US 5,041,199).

These claims differ from Tomantschger *et al.* by reciting a surfactant within the positive electrode. Di Franco discloses cathodes such as MnO_2 which contain carbon and a surfactant (column 3, lines 7-52). Because the surfactants would help the liquid electrolyte to wet the cathode, it would be obvious to use the surfactants of Di Franco in the cathodes of Tomantschger *et al.* While Di Franco lists certain surfactants (column 3, lines 17-42), other types would be known to the ordinary artisan.

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Claims 23, 25 and 26 allowed. A battery with a cathode containing carbon fibers, where the fibers have plural distinct layers of graphite, the recited surface energy, or the recited graphitic index are not taught by the references applied above, or already of record.


Applicant's arguments with respect to claims 1, 3-22, 24 and 27-43 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen J. Kalafut whose telephone number is (703) 308-0433. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (703) 308-2383. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

sjk
March 3, 2003


STEPHEN J. KALAFUT
PRIMARY EXAMINER
GROUP 1700